

11-6130-412-14

TM 11-6130-412-14

TECHNICAL MANUAL

OPERATOR'S, ORGANIZATIONAL, DIRECT SUPPORT
AND GENERAL SUPPORT MAINTENANCE MANUAL
FOR
BATTERY CHARGER PP-2926D/U
(NSN 6130-01-099-5975)

HEADQUARTERS, DEPARTMENT OF THE ARMY
23 SEPTEMBER 1980

READER
FICHE

best copy available

D/01.11:

WARNING

A periodic review of the safety precautions in TB 385-4 is recommended. When the equipment is operated with covers removed, **DO NOT TOUCH** exposed connections or components. **MAKE CERTAIN** you are not grounded when making connections or adjusting components inside the battery charger. Do not attempt to make internal connections or adjustments unless another person capable of performing first aid is present.

WARNING

Avoid personal injury. The battery charger is heavy (186 pounds). Use at least four men to lift; preferably, use a mechanical lift.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flames; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

WARNING

Compressed air is dangerous and can cause serious bodily harm if protective means or methods are not observed to prevent a chip or particle (of whatever size) from being blown into the eyes or unbroken skin of the operator or other personnel. Compressed air shall not be used for cleaning purposes except where reduced to less than 30 lbs/sq in gauge and then only with effective chip guarding and personal protective equipment. Do not use compressed air to dry parts when TRICHLOROTRIFLUOROETHANE has been used.

WARNING

HIGH VOLTAGES exist in this equipment. Avoid shock; ground the battery charger. Before applying power to the battery charger, the protective ground terminals of the equipment must be connected to the equipment grounding conductor (green wire) of the line power cord. Ensure that the line power is connected to a three-conductor line power outlet that has a protective (earth) ground. Do not bypass the protective ground by using an extension cord (power cable) that does not have an equipment grounding conductor (third wire). Improperly grounded equipment can result in hazardous voltages between equipments. Ensure that all devices connected to the battery charger are connected to the earth ground.

WARNING

Disconnect power before removing or replacing covers or assemblies.

WARNING

Prevent personal injury when applying or removing steel strapping by wearing heavy gloves and protective eyewear. Do not handle packing cartons by the steel strapping.

WARNING

Never smoke or light matches in the charging area.

FIRST AID FOR CHEMICAL BURNS

1. In the event of contact with the eyes, IMMEDIATELY flush the eyes with water and continue to flush for 15 minutes. THE FIRST FEW SECONDS AFTER CONTACT are critical and IMMEDIATE FLUSHING of the eyes may prevent permanent damage. An eyewash fountain is preferred, however, an eyewash hose or any other source of water should be used in an emergency. Keep in mind that alkali (base) burns are usually more serious than acid burns.
2. Strong chemicals burn the skin rapidly. There is no time to waste. Begin flushing the area with water IMMEDIATELY. Remove and discard clothing, including socks and shoes (obtain other clothes and shoes). Continue to flood the area while clothing is being removed.
3. The precautionary warning on the product label should be consulted for full first-aid information. Provide the label information to the attending physician.
4. Neutralizers and solvents (alcohol, etc.) should not be used by the first-aider. The spread of skin-absorbing corrosive poison, like phenol, can result in death. Don't depend on spilled chemicals to evaporate from your clothes; exposure to the skin can KILL you.



5

SAFETY STEPS TO FOLLOW IF SOMEONE
IS THE VICTIM OF ELECTRICAL SHOCK

1

DO NOT TRY TO PULL OR GRAB THE INDIVIDUAL

2

IF POSSIBLE , TURN OFF THE ELECTRICAL POWER

3

IF YOU CANNOT TURN OFF THE ELECTRICAL
POWER, PULL, PUSH, OR LIFT THE PERSON TO
SAFETY USING A WOODEN POLE OR A ROPE OR
SOME OTHER INSULATING MATERIAL

4

SEND FOR HELP AS SOON AS POSSIBLE

5

AFTER THE INJURED PERSON IS FREE OF
CONTACT WITH THE SOURCE OF ELECTRICAL
SHOCK, MOVE THE PERSON A SHORT DISTANCE
AWAY AND IMMEDIATELY START ARTIFICIAL
RESUSCITATION

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HEADQUARTERS
DEPARTMENT OF THE ARMY
WASHINGTON, DC, 28 September 1980

Operator's Organizational, Direct Support, and General Support
Maintenance Manual

BATTERY CHARGER PP-2926D/U
(NSN 6130-01-099-5975)

REPORTING ERRORS AND RECOMMENDING
IMPROVEMENTS

You can help improve this manual. If you find any mistakes or if you know of a way to improve the procedures, please let us know. Mail your letter, DA Form 2028 (Recommended Changes to Publications and Blank Forms), or DA Form 2028-2 located in back of this manual direct to: Commander, US Army Communications and Electronics Materiel Readiness Command, ATTN: DRSEL-ME-MQ, Fort Monmouth, New Jersey, 07703.

In either case, a reply will be furnished direct to you.

TABLE OF CONTENTS

	Paragraph	Page
CHAPTER 1. INTRODUCTION		
Section I. General	1-1	1-1
II. Description and Data	1-7	1-2
CHAPTER 2. INSTALLATION		
Section I. Service Upon Receipt of Material	2-1	2-1
II. Installation Instructions	2-3	2-3
CHAPTER 3. OPERATING INSTRUCTIONS		
Section I. Controls and Indicators	3-1	3-1
II. Operating Procedure	3-3	3-1
CHAPTER 4. OPERATOR'S AND ORGANIZATION MAINTENANCE INSTRUCTIONS		
Section I. Tools and Equipment	4-1	4-1
II. Preventive Maintenance Checks and Services	4-3	4-1
III. Operator and Organizational Troubleshooting	4-7	4-2
CHAPTER 5. FUNCTIONING OF EQUIPMENT		
6. GENERAL SUPPORT MAINTENANCE INSTRUCTIONS		
Section I. General	6-1	6-1
II. Tools and Equipment	6-3	6-4
III. Troubleshooting	6-5	6-4
IV. Repairs and Adjustments	6-7	6-5
V. General Support Testing Procedures	6-10	6-8
APPENDIX A. REFERENCES		A-1
B. COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LIST		
Section I. Introduction		B-1
II. Components of End Item		B-2
III. Basic Issue Items		B-3
APPENDIX C. ADDITIONAL AUTHORIZATION LIST (Not Applicable)		
D. MAINTENANCE ALLOCATION		
Section I. Introduction		D-1
II. Maintenance Allocation Chart for Charger, Battery PP-2926D/U		D-3
III. Tool and Test Equipment Requirements for Charger, Battery PP-2926D/U		D-4
IV. Remarks		D-5
APPENDIX E. EXPENDABLE SUPPLIES AND MATERIALS LIST		
Section I. Introduction		E-1
II. Expendable Supplies and Materials List		E-2
INDEX		INDEX-1

LIST OF ILLUSTRATIONS

Figure	Title	Page
1-1	Battery Charger PP-2926D/U	1-1
2-1	Typical Packaging	2-2
2-2	Transformer Terminal Board Jumpers	2-4
3-1	Controls and Indicators	3-1
5-1	Battery Charger, Block Diagram	5-1
5-2	Three Phase, Y Connected Bridge Rectifier	5-2
5-3	Power and Control Circuitry	5-3
5-4	Battery Cut-Out Circuitry	5-4
5-5	Start and Current Limit Circuits	5-5
6-1	Component Location Diagram (Sheets 1 and 2)	6-2
6-2	Printed Circuit Board A1 Controls	6-6
6-3	Phase Adjustments Waveform	6-7
3-4	Insulation Breakdown Test Setup	6-10
6-5	Performance Test Setup	6-11
FO-1	Battery Charger PP-2926D/U, Schematic Diagram	FO-1
FO-2	Color Code Markings for MIL-STD Resistors, Inductors and Capacitors	FO-3

LIST OF TABLES

Number	Title	Page
3-1	Controls and Indicators	3-1
4-1	Operator/Crew Preventive Maintenance Checks and Services	4-2
4-2	Organizational Preventive Maintenance Checks and Services	4-3
4-3	Troubleshooting Procedure	4-3
6-1	Troubleshooting	6-4

CHAPTER 1

INTRODUCTION

Section I. GENERAL

1-1. Scope.

a. This manual describes Battery Charger PP-2926D/U (fig. 1-1) and provides instructions for operation, organizational maintenance, and general support (GS) maintenance. It includes a maintenance allocation chart (app D). Instructions are provided for the operator and organizational technician for installation, operation, preventive maintenance, and replacement of parts available at organizational maintenance. Circuit functioning is included for general support maintenance, together with instructions appropriate to these categories of maintenance for troubleshooting, testing, adjusting, aligning, and repairing the equipment and replacing maintenance parts.

b. No direct support maintenance is authorized.

1-2. Indexes of Publications.

a. *DA Pam 310-4*. Refer to the latest issue of *DA Pam 310-4* to determine whether there are new editions, changes, or additional publications pertaining to the equipment.

b. *DA Pam 310-7*. Refer to *DA Pam 310-7* to determine whether there are modification work orders (MWO's) pertaining to the equipment.

1-3. Maintenance Forms, Records, and Reports.

a. *Reports of Maintenance and Unsatisfactory Equipment*. Maintenance forms, records, and reports which are to be used by maintenance personnel at all maintenance levels are listed in and prescribed by TM 38-750, The Army Maintenance Management System.

b. *Report of Item and Packaging Discrepancies*. Fill out and forward SF 364 (Report of Discrepancy (ROD) as prescribed in AR 735-11-2/DLAR 4140.55/NAVSUPINST 4440.127E/AFR 400.54/MCO 4430.E.

c. *Discrepancy in Shipment Report (DISREP) SF 361*. Fill out and forward Discrepancy in Shipment Report (DISREP) (SF 361) as prescribed in

AR55-38/NAVSUPINST 4610.33B/AFR 75-18/MCO P4610.19C and DLAR 4500.15.

1-4. **Administrative Storage.** Refer to paragraph 4-4 for administrative storage instructions.

1-5. **Destruction of Army Electronics Materiel.** Destruction of Army electronics materiel to prevent enemy use shall be in accordance with TM 750-244-2.

1-6. **Reporting Equipment Improvement Recommendations (EIR).** If your Battery Charger PP-2926D/U needs improvement, let us know. Send us an EIR. You, the user, are the only one who can tell us what you don't like about your equipment. Let us know why you don't like the design. Tell us why a procedure is hard to perform. Put it on an SF 368 (Quality Deficiency Report). Mail it to Commander, US Army Communications and Electronics Materiel Readiness Command, ATT: DRSEL-ME-MQ, Fort Monmouth, New Jersey 07703. We'll send you a reply.

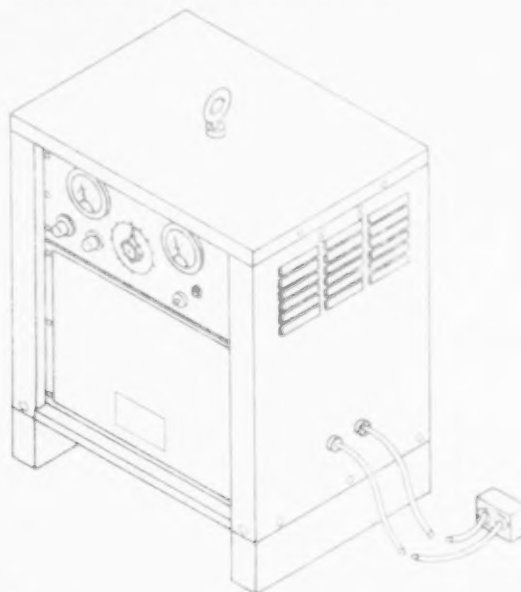


Figure 1-1. Battery Charger PP-2926D/U EL6FX001

Section II. DESCRIPTION AND DATA

1-7. Purpose and Use.

a. Battery Charger PP-2926D/U provides a source of direct current (dc) for charging lead-acid (LA) type storage batteries such as those used in electrically operated forklift trucks.

b. The PP-2926D/U can be used to charge 18-cell LA batteries (rated 850 amp/hr) without removing the battery from the forklift truck.

1-8. Description.

a. The PP-2926D/U is a self-contained unit housed in a metal cabinet with a hinged access door on the front panel. Louvers on the right-hand and left-hand side panels allow for convection cooling.

b. All controls and meters are mounted on the front panel.

c. The input power cable is a 9 foot, 3 inches, four conductor unterminated cable which comes out at the left side.

d. The dc output cable is a 10-foot cable terminated in a two-conductor storage battery plug and comes out the right side of the cabinet.

1-9. Tabulated Data.

Power input voltage	208 volts $\pm 10\%$, 230 volts $\pm 10\%$, or 460 volts $\pm 10\%$, 47-63 Hz, three phase, four wire.
Current per phase (maximum at full load)	27 amperes for 208-volt input; 30 amperes for 230-volt input; 15 amperes for 460-volt input.
Power output: Voltage	Variable from 30 to 45 volts dc.
Current	To 140 amperes.
Timing Control	Adjustable for automatic cutoff at end of operator's present time.
Charging time (completely discharged battery)	Approximately 8 hours
Weight	186 pounds
Dimensions	24 in. w by 18 in. d by 30 in. h.

CHAPTER 2

INSTALLATION

Section I. SERVICE UPON RECEIPT OF MATERIAL

2-1. Unpacking.

a. Packaging Data. When packed for shipment, Battery Charger PP-2926D/U is placed in a carton and packed in a wooden box 26 inches by 28 inches by 37 inches.

b. Removing Content. Perform all the steps given below when unpacking the equipment (fig. 2-1).

(1) Cut and fold back the metal straps.

(2) Remove the nails from the top and one side of the box with a nailpuller. Remove the top and the side.

(3) Open the moistureproof barrier that covers the carton inside the box and remove the carton.

(4) Open the carton and the moisture-vapor-proof barrier within the carton, and remove the inner carton; then, open the inner carton and remove the contents.

2-2. Checking Unpacked Equipment.

a. Inspect the equipment for damage incurred

during shipment. If the equipment has been damaged, report the damage on SF 364 (para 1-3b).

b. Check to see that the equipment is complete as listed on the packing slip. If a packing slip is not available, check the equipment against the components of end items list (app B). Report all discrepancies in accordance with instructions given in TM 38-750 (para 1-3a). Shortage of a minor assembly or part that does not affect the proper functioning of the equipment should not prevent the use of the equipment.

NOTE

Current MWO's applicable to the equipment are listed in DA Pam 310-7.

c. If the equipment has been used or reconditioned, check to see whether it has been changed by a modification work order. If the equipment has been modified, the MWO number will appear on the front panel near the nomenclature plate. If the equipment has been modified, check to see that any operational instruction changes which result from the modification have been entered in the equipment manual.

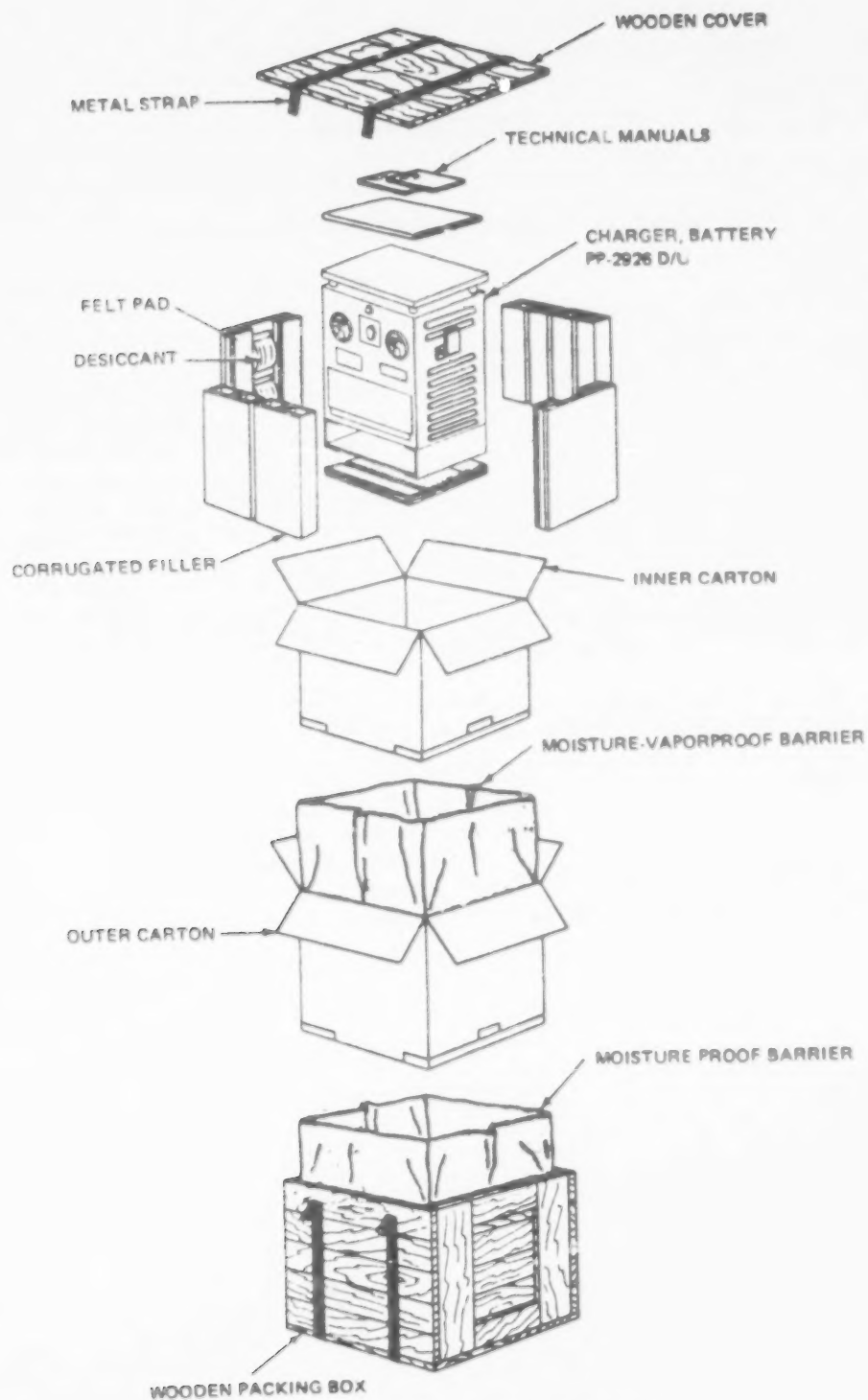


Figure 2-1. Typical Packaging EL6FX002

Section II. INSTALLATION INSTRUCTIONS

The following installation procedure must be made with the assistance of organizational or higher maintenance personnel.

2-3. Tools and Materials Required for Installation. No special tools or additional materials are required for installation.

2-4. Installation and Connections.

a. Select a location in a building that has 208-, 230-, or 460-volt, three-phase, 47-63 Hz electrical service installed.

b. Select a site that will permit a forklift truck to drive up to the unit. The battery charger is permanently connected to a 10-foot, dc output cable (fig. 1-1) which limits the distance between the battery charger and a forklift truck.

c. Position the battery charger away from partitions or any obstructions that will obstruct the flow of air through the cabinet.

d. The battery charger may be installed side-

by-side with additional units, but must have a minimum clearance of 6 inches on each side.

WARNING

Extremely dangerous voltages exist in the battery charger. The input power must be turned off before opening the front panel access door to make connections.

e. Disconnect power from the power source.

f. Connect the red, white, and black wires to the 3-phase power source.

g. Connect the green wire to the power source ground.

h. According to the power source voltage, connect the transformer terminal boards as shown in figure 2-2.

NOTE

The battery charger is shipped already wired for a 230-volt, 60 Hz, 3-phase operation.

i. Reconnect power to the power source.

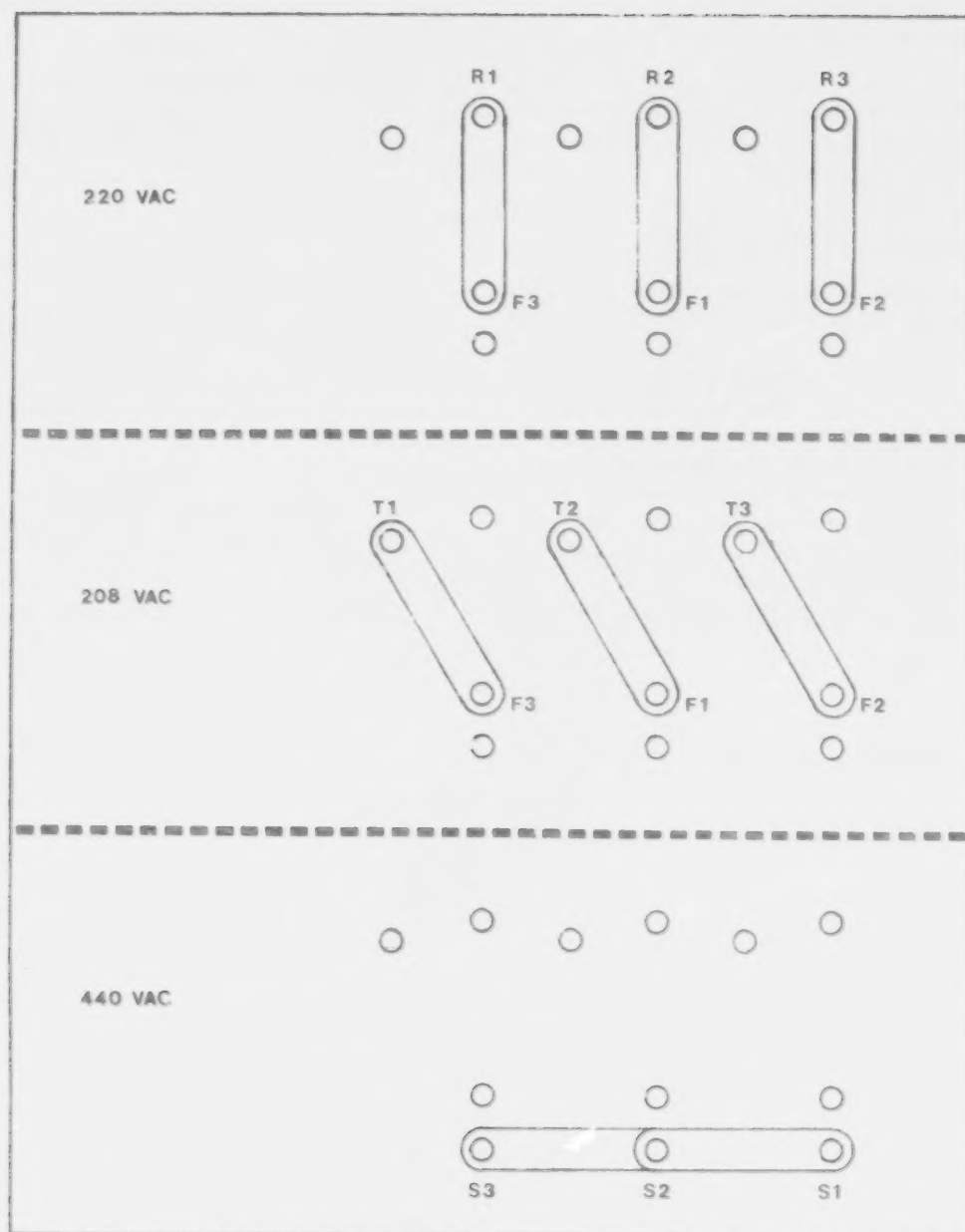


Figure 2-2. Transformer Terminal Board Jumpers EL6FX603

CHAPTER 3

OPERATING INSTRUCTIONS

Section I. CONTROLS AND INDICATORS

3-1. Damage From Improper Settings. This chapter should be read carefully before using the battery charger.

3-2. Operator Controls and Indicators. The battery charger controls and indicators are on the front panel. They are shown in figure 3-1 and their functions are listed in table 3-1.

Table 3-1. Controls and Indicators

Control or indicator	Function
PUSH TO START switch	When pushed, turns on input power to the battery charger. Input power is turned off when TIMER is set to OFF.

Table 3-1. Controls and Indicators—Continued

Control or indicator	Function
TIMER switch	Sets time cycle. TIMER is on as soon as switch is turned from OFF position. Output power of battery charger is disconnected from load when TIMER switch reaches OFF.
Power light	Illuminates when TIMER is turned on.
D.C. AMPERES meter	Indicates charging current.
D.C. VOLTS meter	Indicates charging voltage.
COARSE CHARGE RATE SEL. control	Adjusts rate of charge according to size of battery.
FINE CHARGE RATE SEL. control	Adjusts fine voltage and current charge rate.

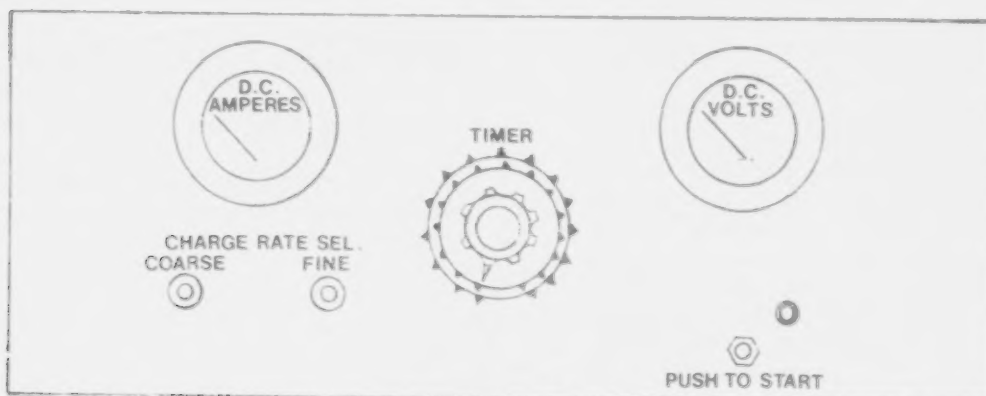


Figure 3-1. Controls and Indicators EL6FX004

Section II. OPERATING PROCEDURE

WARNING

Never smoke or light matches in the charging area.

3-3. Charging 12-Cell Lead Acid Battery.

NOTE

For complete information concerning lead-

acid batteries, refer to TM 9-6140-200-12 and TM 10-1690A.

CAUTION

Observe gassing carefully, particularly near the end of the charge. Excessive violent gassing indicates that the battery is becoming overcharged.

After performing the connection procedures given in paragraph 2-4, charge an 18-cell lead acid battery as follows:

a. Remove the vent caps from the battery to be charged and add distilled or deionized water as necessary.

b. Connect the dc output cable battery connector to the forklift 18-cell lead-acid battery receptacle.

c. Depress PUSH TO START switch to set the TIMER to proper time, and monitor the initial battery-charging current on the ammeter. If the

ammeter indicates greater than 140 amperes, refer to higher category maintenance for adjustment.

d. The TIMER will charge for the set time and then turn off the battery charger.

e. Disconnect the dc output battery connector from the battery.

3-4. Turn Off Procedure.

a. To turn off the battery charger, set TIMER switch OFF.

b. Replace the vent caps.

CHAPTER 4

OPERATOR'S AND ORGANIZATIONAL MAINTENANCE INSTRUCTIONS

Section I. TOOLS AND EQUIPMENT

4-1. Special Tools and Test Equipment. Refer to the maintenance allocation chart (app D), for tools and equipment to be used at operator and organizational maintenance level.

4-2. Materials Required. The following main-

tenance materials are required for operator and organizational maintenance:

- a. Lint-free cleaning cloth
- b. Trichlorotrifluoroethane
- c. Soft-bristled brush
- d. Fine sandpaper (no. 000)
- e. Paint
- f. Electrical insulation tape

Section II. PREVENTIVE MAINTENANCE CHECKS AND SERVICES

4-3. General.

a. *Before You Operate.* Always keep in mind the CAUTIONS and WARNINGS. Perform your before (B) PMCS.

b. *While You Operate.* Always keep in mind the CAUTIONS and WARNINGS. Perform your during (D) PMCS.

c. *After You Operate.* Be sure to perform your after (A) PMCS.

d. *If Your Equipment Fails to Operate.* Troubleshoot with proper equipment. Report any deficiencies using the proper form, see TM 38-750.

4-4. Procedures.

a. Perform the PMCS as shown in tables 4-1 and 4-2. Checks and services are numbered in numerical order in the item number column of the table, regardless of interval. Use this column as the source of item numbers for the TM Number column of DA Form 2402, Equipment Inspection and Maintenance Worksheet, in recording results of PMCS.

b. If the PP-2926D/U is scheduled for administrative storage (1 through 45 days), perform the preventive maintenance checks and services listed in tables 4-1 and 4-2 immediately before placing it in storage and immediately after removing it from storage.

4-5. Cleaning. Inspect the exterior surfaces of the battery charger. The exterior should be free of dirt, grease and fungus.

a. Remove the dust and other dirt with a clean, soft cloth.

WARNING

Adequate ventilation should be provided while using TRICHLOROTRIFLUOROETHANE. Prolonged breathing of vapor should be avoided. The solvent should not be used near heat or open flame; the products of decomposition are toxic and irritating. Since TRICHLOROTRIFLUOROETHANE dissolves natural oils, prolonged contact with skin should be avoided. When necessary, use gloves which the solvent cannot penetrate. If the solvent is taken internally, consult a physician immediately.

b. Remove grease, fungus, and ground-in dirt from the cabinet, use a cloth dampened (not wet) with trichlorotrifluoroethane.

c. Remove dirt from the dc output cable with a brush.

CAUTION

Do not press on the meter face (glass) when cleaning; the meter may be damaged.

d. Clean the front panel meters and control knob; use a soft, clean cloth. If necessary, dampen the cloth with water. Mild soap may be used for more effective cleaning.

4-6. Rustproofing and Painting.

a. Rustproofing. When the finish on the battery charger has become badly scarred or damaged, rust and corrosion can be prevented by touching up the bare spots. Use No. 000 sandpaper to clean the surface down to the bare metal. Obtain a bright smooth finish.

b. Painting. Remove the rust and corrosion from the metal surface as explained in *a* above. Brush two thin coats of paint on the bare metal to protect it. Refer to the applicable cleaning and refinishing practices specified in TB 43-0118.

Section III. OPERATOR AND ORGANIZATIONAL TROUBLESHOOTING**4-7. General Troubleshooting Information**

Troubleshooting the PP-2926D/U is based upon the operational check contained in the preventive maintenance checks and services table 4-2. If an abnormal condition or result is observed, note the trouble in troubleshooting table 4-3 and perform

the corrective actions indicated therein. If the corrective actions indicated do not result in correction of the trouble, or if there is no corresponding trouble in the troubleshooting chart, higher category of maintenance is required.

Table 4-1. Operator/Crew Preventive Maintenance Checks and Services

NOTE

Withing designated intervals, these checks are to be performed in the order listed.

Item no.	Interval					Item to be inspected	Procedures check and have repaired or adjusted as necessary	For readiness reporting, equipment is not ready/available if
	B	D	A	W	M			
1	•					Battery charger	See that equipment is complete.	Output cables are missing.
2	•					Power cables	Inspect for insulation cuts, breaks, and deterioration. Inspect for damaged or missing connectors and clips.	Conductor is exposed, or connector or clip is missing or damaged.
3	•					Meters	Inspect for cracked or broken glass, bent or broken pointers.	Any meter defect is noted.
4	•					Power Indicator	Inspect for cracks or break.	Bezel is cracked or broken.
5		•				Power Indicator	Check to see that indicator lights when battery charger is turned on.	Power indicator does not light.
6		•				Meters	Check to see that they indicate dc charging voltage and current.	Either meter does not operate.
7		•				Switches	As switches are operated, see that operation is smooth and positive.	Switch binds or action feels loose.
8			•			Output cable	Disconnect and store on side of battery charger.	

Table 4-2. Organizational Preventive Maintenance Checks and Services

			Legend		
			W—Weekly	M—Monthly	
Item no.	Interval		Item to be inspected		Procedures
	W	M			
1	•	•	Exterior surfaces		See that exterior surfaces are free of dust, dirt, oil. Inspect cabinet exterior for loose hardware and corrosion. Tighten loose hardware; remove corrosion.
2	•		Painted surfaces		Check to see that outer painted surfaces are free of bare spots and corrosion. Refinish as needed.
3	•		Power cables		Check for cuts, cracks, wiring breaks, and damaged connectors and clips.
4	•		Meter glass		Clean and check for cracks and breaks.
5		•	Power indicator lamp		Check to see that lamp is firmly seated in its holder. Tighten if necessary.
6		•	Cabinet interior		Open hinged front door. Check to see that cabinet interior is free of dust, dirt, and other foreign matter. Clean as needed.
7		•	Terminal boards		Check terminal boards for cracks and breaks. Check for loose terminal screws and connections; tighten as necessary.
8		•	Other electrical components		Examine electrical parts for signs of overheating.
9		•	Internal wiring		Inspect for cut or frayed insulation and broken leadwires.
10		•	Overall operation		Test-charge a battery. Refer to paragraph 3-3. Be alert for any signs of malfunction.

Table 4-3. Troubleshooting Procedure

Malfunction	Probable cause	Corrective action
TIMER set on, PUSH TO START to ON, power light does not light.	Defective light.	Check light DSI and replace if defective.
Amperes meter not indicating.	Open circuit breaker.	Reset circuit breaker.
Voltmeter not indicating.	Open circuit breaker.	Reset circuit breaker.

CHAPTER 5

FUNCTIONING OF EQUIPMENT

5-1. General. The circuit description in this chapter is intended to support and aid maintenance and troubleshooting of the battery charger. No attempt is made to describe component operation or common circuit operation (e.g., bridge rectifier). Control circuitry is described in detail using simplified circuit segments. The description begins with a block diagram and ends with a description of the detailed circuit diagram. The overall schematic diagram is shown in figure FO-1.

5-2. Battery Charger Block Diagram. Refer to figure 5-1. The power input is three phase, 208 volts, 230 volts or 460 volts at 47-63 Hz and applied to power transformer T1. The output of the rectifier is applied to the battery at the B+ and B- terminals at the same time a sample output is supplied back to the control circuits. The front panel controls furnish information to the control circuits; e.g., battery type and charge rate, which in turn controls the rectifiers.

5-3. Rectifier Circuitry. The rectifier circuitry is shown in figure 5-2. This rectifier is a three phase Y-connected bridge rectifier with an input frequency of 47-63 Hz. For each phase, one half of each cycle is controlled. As an example, for the phase at winding 3B, CR1 controls current flow during the negative alternation, and during the positive alternation diodes CR4, CR5 and CR6 allow uncontrolled conduction. The dc output is unfiltered so the ripple is plainly visible on an oscilloscope. The primary is Y-connected for 460 volt input and delta connected for 230 volt input and 208 volt input.

5-4. Control Circuitry. Refer to figure 5-3. Part of T1 is shown in the figure; the secondary windings for one phase. The power winding is associated with terminals 3A and 3B. The 3A terminal connects to the three phase common or center of the three phase Y configuration. The control sig-

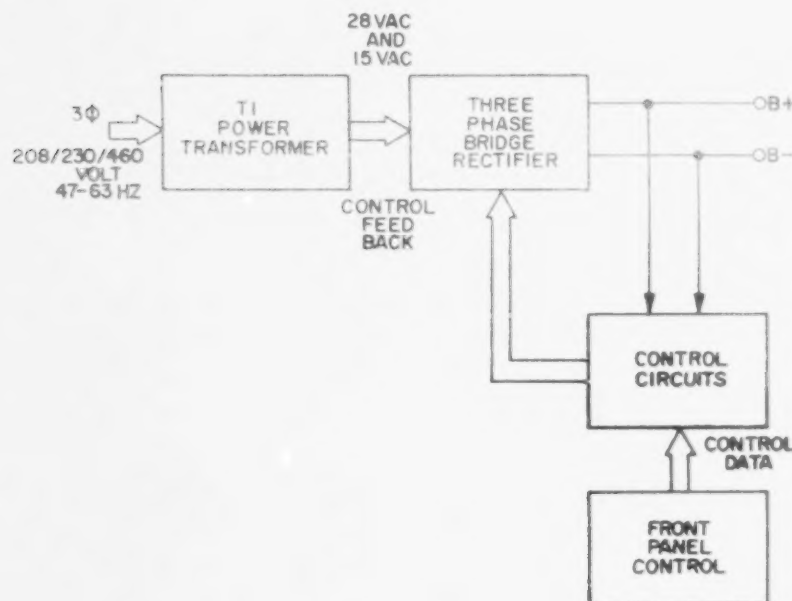


Figure 5-1. Battery Charger, Block Diagram. EL6FX005

nal winding is associated with terminals 3X and 3Y. One-third of the three phase bridge rectifier consists of CR4, CR5, CR6 and CR1. Thus, one-half of the rectifier is controlled, which determines the average current and voltage. The power winding control winding are opposite in phase, so that when 3B is negative with respect to 3A, 3Y is positive with respect to 3X. This supplies the proper polarity for the gate of CR1. The output of the control winding is applied across A1CR1 and associated load. The time (on the alternation) that A1CR1 fires is determined by the resistance between anode and gate. This resistance consists of A1R1 (factory set), R15 FINE control, and COARSE switch S3. When A1CR1 fires, the gate of CR1 becomes more positive (or less negative) than the cathode and CR1 fires. Both SCR's are turned off by reverse voltage. The circuit description for the other two phases is the same as that described above.

5-5. Charge Rate. The battery charger has an inherent taper charging curve characteristic throughout the charge cycle. The starting charge rate selected by the coarse charge rate control is a high current charge. This charge rate tapers off to a rate not exceeding 5 amperes per 100 ampere hours of the rated battery capacity as the battery becomes charged.

5-6. Battery Cut-Out. Refer to figure 5-4. The battery cut-out circuit disconnects the battery from the battery charger circuitry, when off, to prevent discharge of the battery. When power is applied to transformer T1 (and thus the three phase rectifiers), power is also applied to the bridge rectifier which consists of CR13, CR14, CR15 and CR16. This energizes CB2 and the contacts of CB2 close allowing the voltage from the battery charger to charge the battery.

5-7. Start Circuit. Refer to figure 5-5. The PUSH TO START S1 is a momentary type push-button. This switch causes a closure between phase three and phase two. T2 is a current sample transformer, while CB1 is the main contactor that supplies power to the Y bridge rectifier. L1 and L2 are partial choke coils to drop some of the voltage between the two phases. Switch S2 is a push-button switch controlled by one of the bus bars on the input power terminal. When wired for 208 volts or 230 volt operation, the switch is closed thereby bypassing L1. The timer M3 must be on to allow the PUSH TO START switch S1 to operate. The terminal switch TS1 is normally closed, unless overheated. When the PUSH TO START switch S1 is pressed, power is applied to the bridge rectifier consisting of CR10 through CR13. This energizes K1 and the hold-in contacts close, hold-

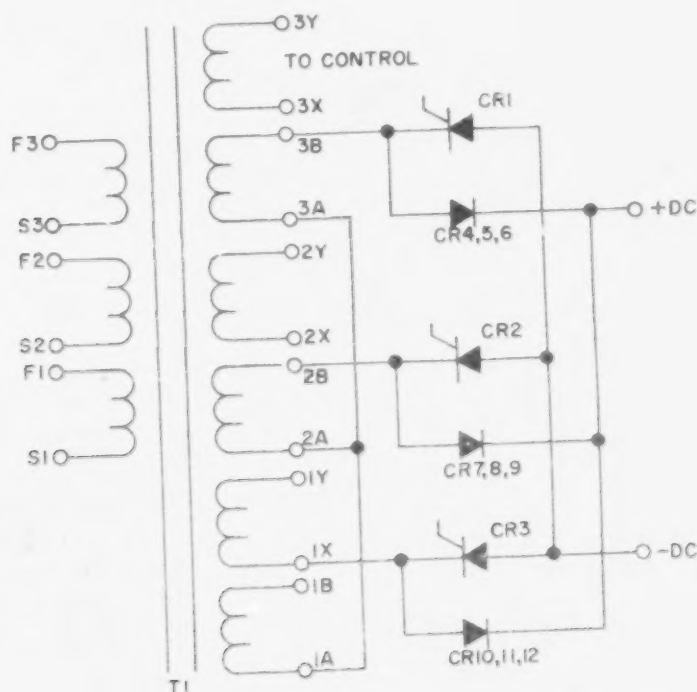


Figure 5-2. Three Phase, Y-Connected Bridge Rectifier EL6FX006

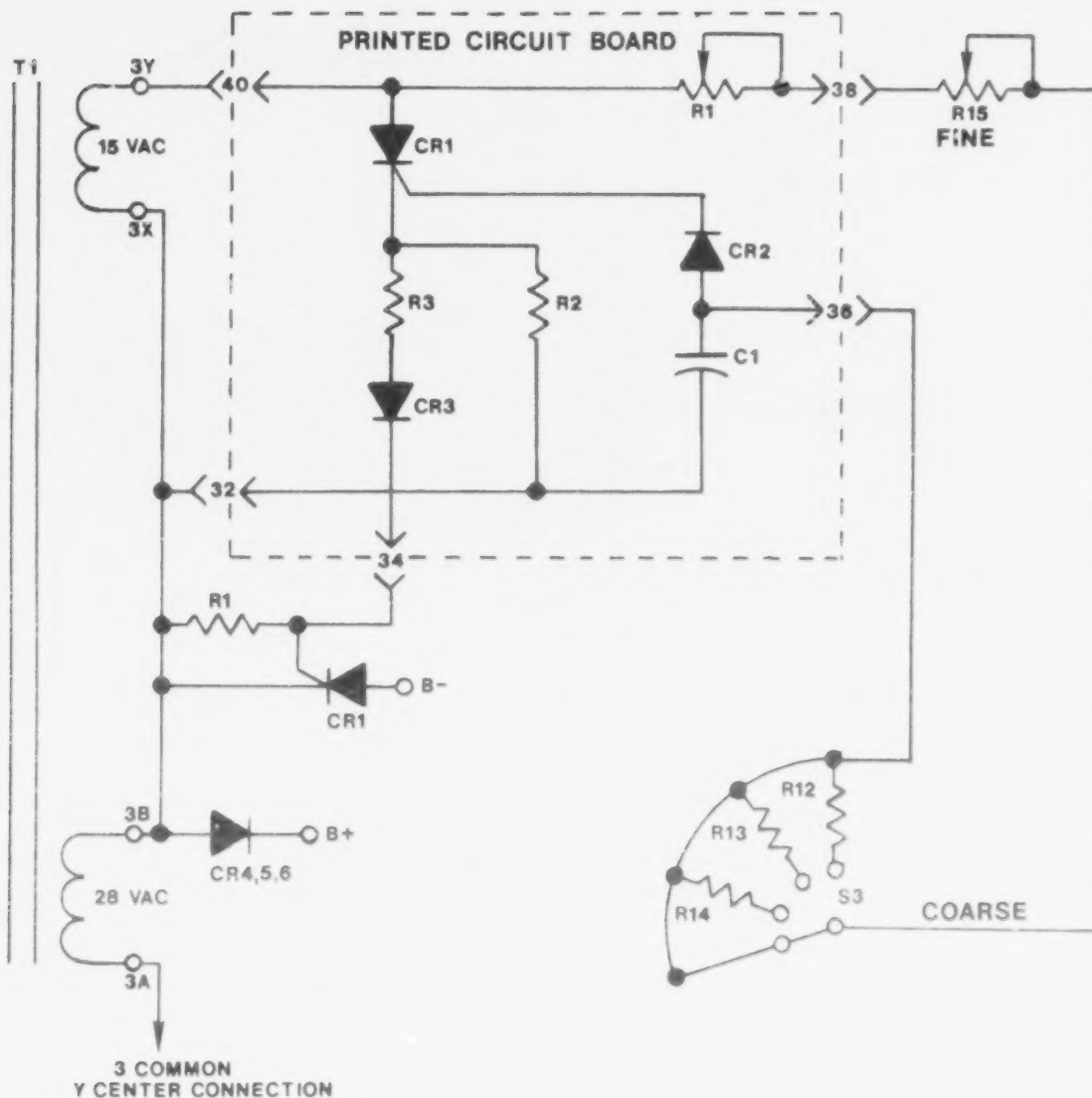


Figure 5-3. Power and Control Circuitry EL6FX007

ing relay K1 energized, until the circuit is broken by the TIMER or the thermal switch TS1. The battery charger is in operation as long as relay K1 remains energized.

5-8. Current Limit Circuit. Refer to figure 5-5. The current sample transformer is T2. As the current drawn from phase three increases, the sec-

ondary output voltage increases. The voltage across R14, R15 and R16 increases until (when maximum current is reached) Q1 conducts. The point at which Q1 conducts is determined by R15. When Q1 conducts, CR18 fires and relay K2 is energized. When relay K2 is energized, the contacts short the coil of relay K1 causing it to de-energize turning off the battery charger. The current limit is factory set at 175 amperes by R15.

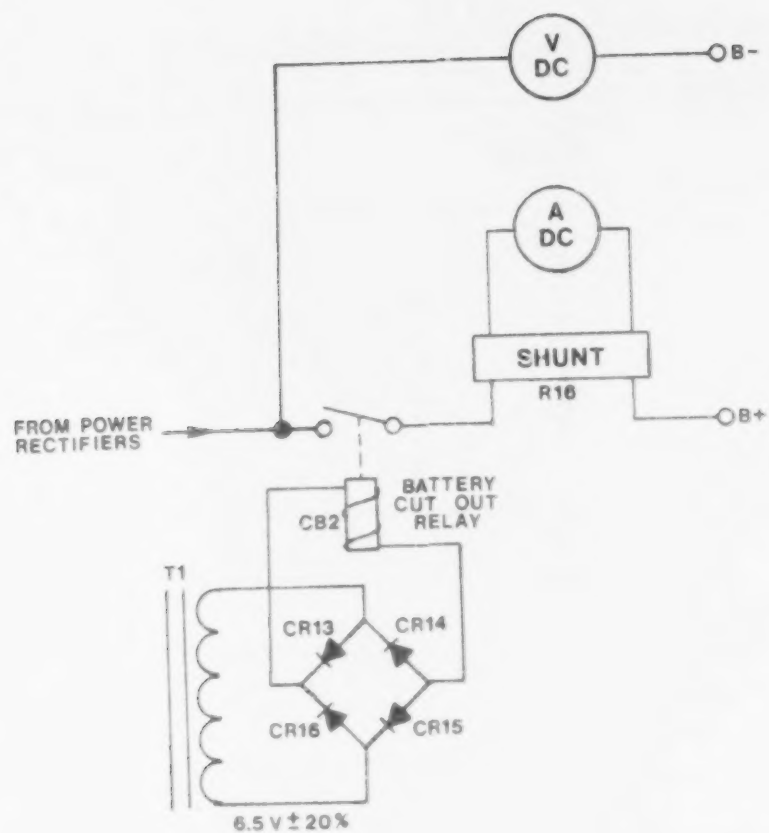


Figure 5-4. Battery Cut-Out Circuitry EL6FX008

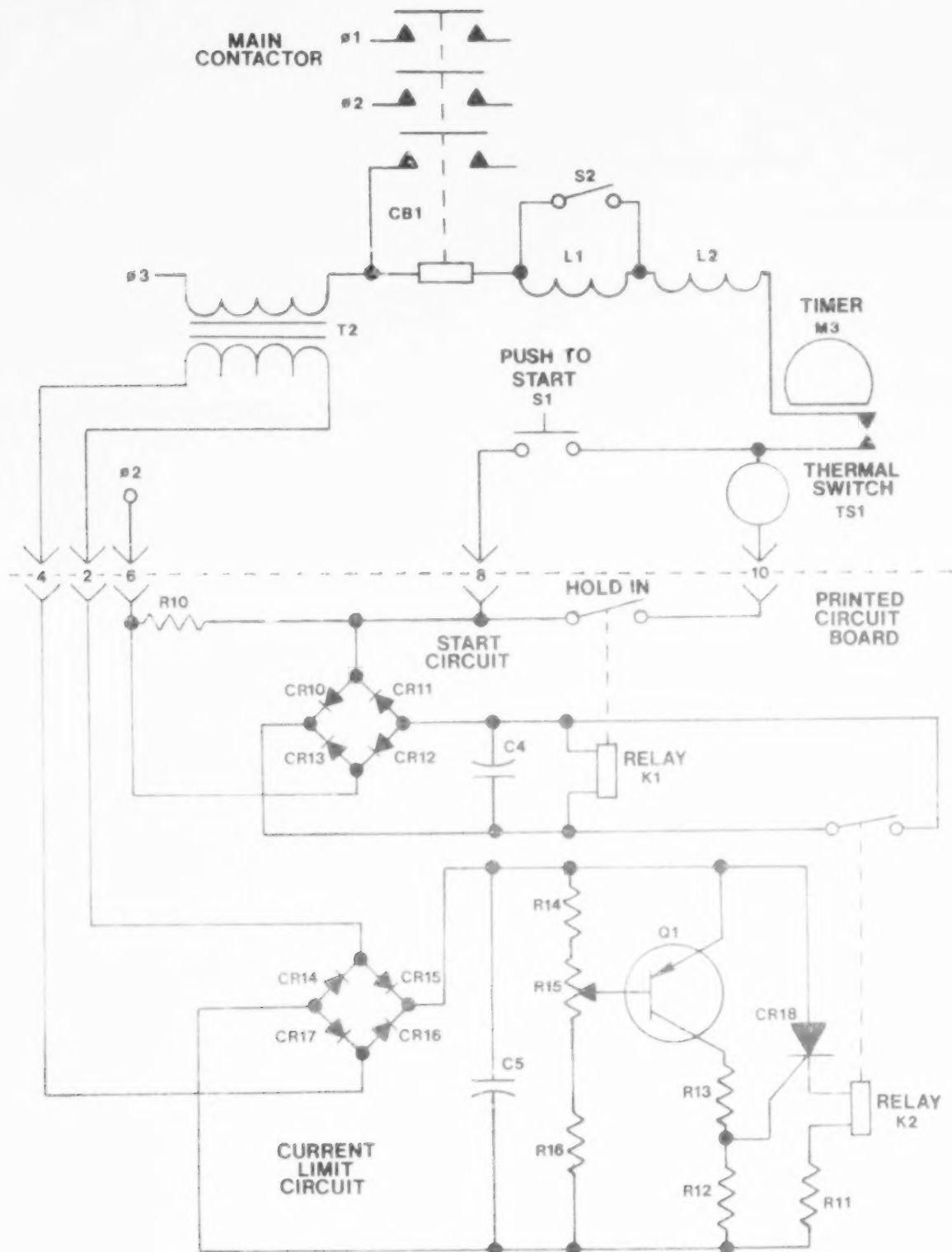


Figure 5-5. Start and Current Limit Circuits EL6FX009

CHAPTER 6

GENERAL SUPPORT MAINTENANCE INSTRUCTIONS

Section I. GENERAL

6-1. Scope. This chapter details the instructions necessary to troubleshoot, repair, and adjust Battery Charger PP-2926D/U at the general support maintenance level.

6-2. Supporting Illustrations. Refer to figure

FO-2 for standard color code identification for resistors, inductors and capacitors. Figure FO-1 is an overall schematic diagram of the battery charger and along with figures 5-1 through 5-5 and figure 6-1 should be used when performing maintenance.

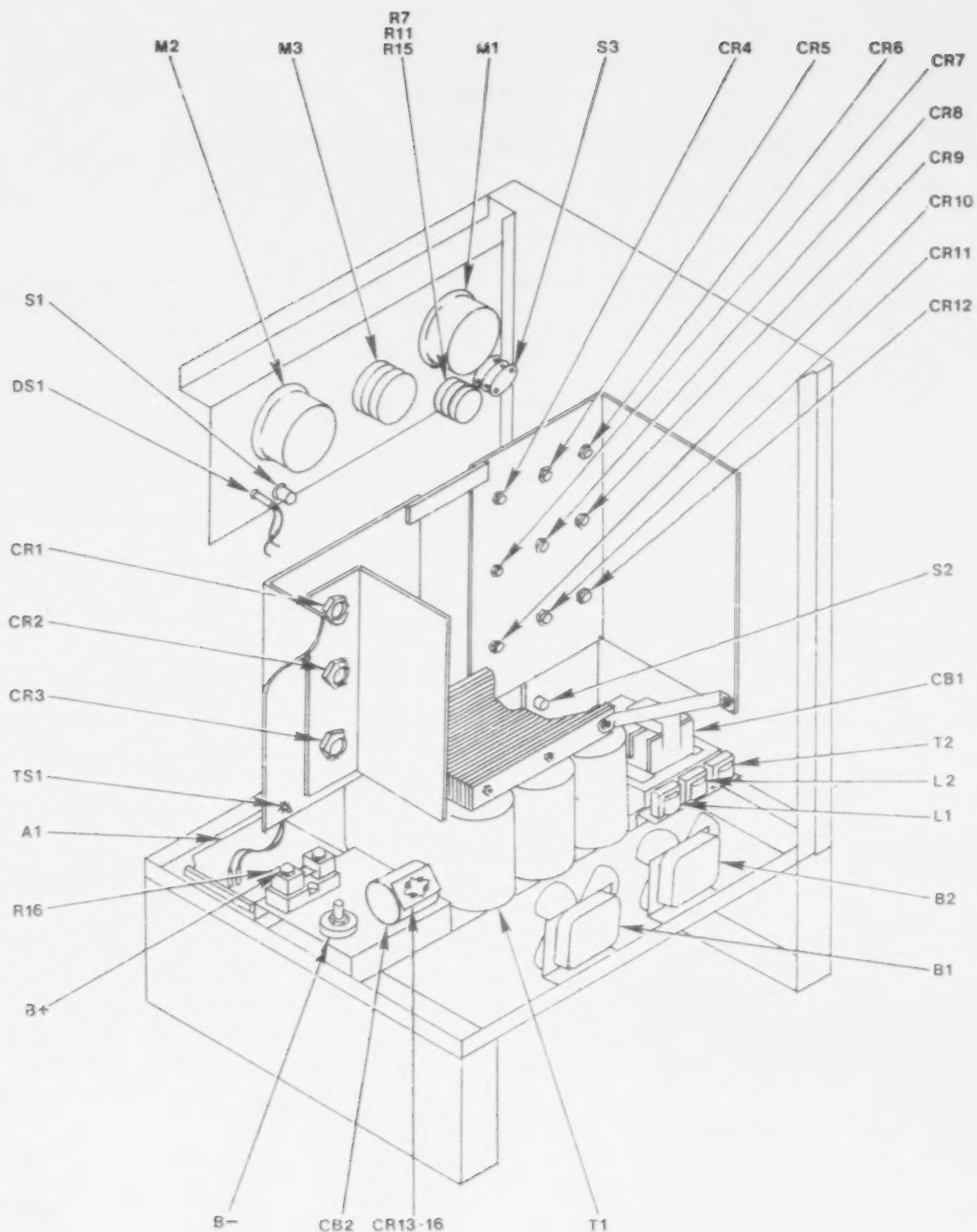


Figure 6-1. Component Location Diagram (Sheet 1 of 2) EL6FX013

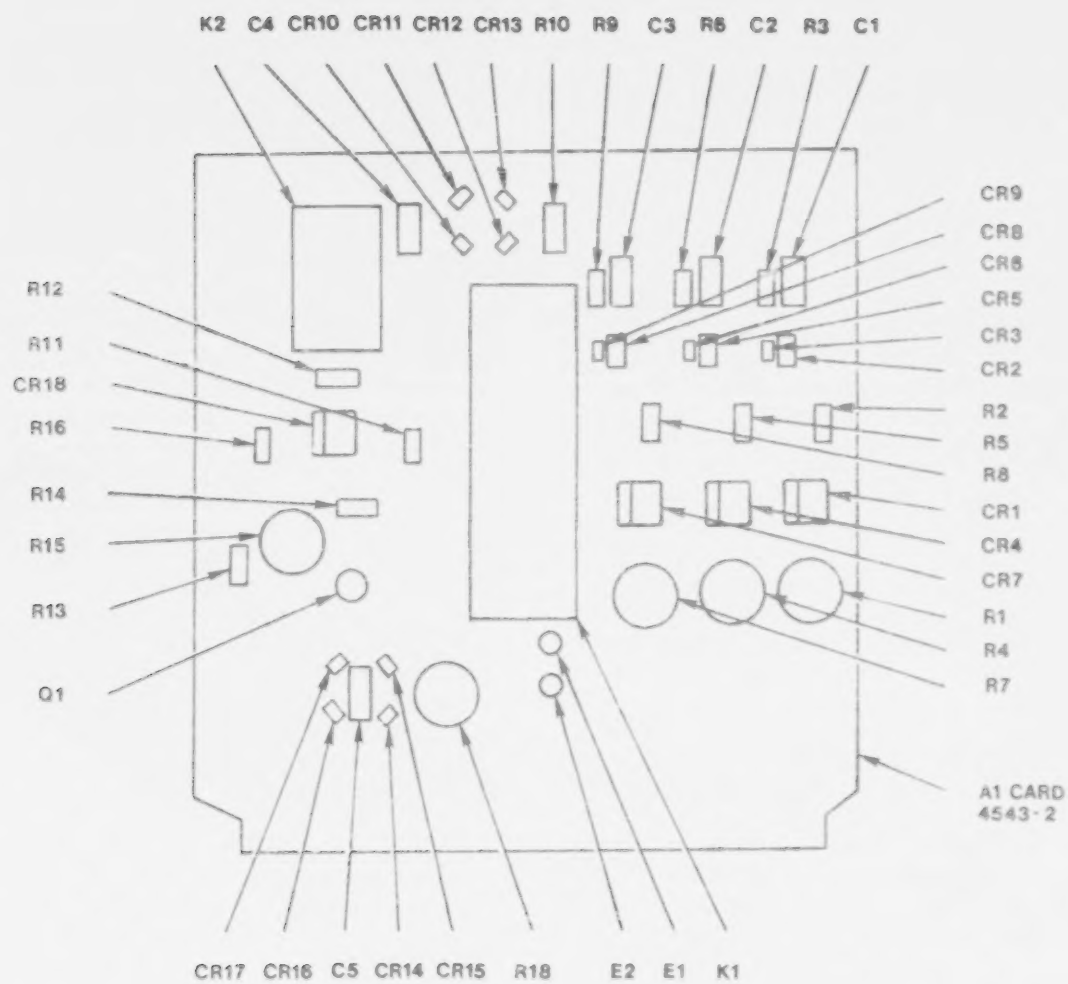


Figure 6-1. Component Location Diagram (Sheet 2 of 2) EL6FX016

Section II. TOOLS AND EQUIPMENT

6-3. Tools and Equipment Required. Refer to the maintenance allocation chart (app D) for tools and equipment required for general support maintenance.

6-4. Repair Parts. Refer to TM 11-6130-412-24P for the repair parts authorized at the general support maintenance level.

Section III. TROUBLESHOOTING

6-5. General Instructions. Troubleshooting at the general support maintenance level includes the techniques required to isolate a defective part. Table 6-1 provides the troubleshooting information to be used by the technician.

WARNING

When troubleshooting the battery charger, be extremely careful of high voltages. Be sure that the input power is off before opening the front door to reach the interior of the unit. If tests must be performed with the power applied to the battery charger, be careful of the input voltage which is present at the terminals of circuit breaker CB1.

If the rear panel must be removed and the battery charger placed in an operational mode for maintenance purposes, the cooling fans must be electrically disconnected from the ac power source to avoid serious injury. With the fans inoperative, the battery charger should not be operated at more than 20 percent of full load for longer than two hour periods. If more time is required, allow the battery charger at least one-half hour to cool

down before starting up again. Upon completion of maintenance, make sure the cooling fans are reconnected to the ac power source before reinstalling the rear panel.

6-6. Organization of Troubleshooting Procedures.

a. General. The first step is servicing a defective battery charger is to sectionalize the fault. Sectionalization means tracing the fault to the input or output portion of the unit. The second step is to localize the fault. Localization means tracing the fault to a defective circuit responsible for the condition. Some faults, such as burned-out resistors, arcing, and shorted transformers can often be located by sight, smell, and sound. The majority of faults, however, must be isolated by checking voltages and resistances.

b. Sectionalization and Localization. The tests given in (1) and (2) below will reduce unnecessary work and aid in tracing trouble in a defective battery charger. The battery charger is a single unit and is theoretically divided into several sections for convenience in troubleshooting as input, rectifiers, dc output and ac control.

Table 6-1. Troubleshooting

<i>Malfunction</i>	<i>Probable cause</i>	<i>Corrective action</i>
Battery charger will not start	a. TIMER switch improperly set. b. FINE CHARGE RATE SEL control set fully ccw. c. Improper input power and/or incorrect transformer terminal board connections. d. Printed circuit board A1 improperly installed. e. Thermal switch wires not securely connected to printed circuit board A1. f. Overheated thermal switch.	a. Remove from OFF position. b. Turn control cw. c. Check for proper input power and transformer terminal board connections. d. Check A1 for correct installation. e. Check connections. f. Allow sufficient time for switch to cool off.
Insufficient current	One phase missing.	Connect oscilloscope between B+ and B-. Use external sync with one of the phases to determine the missing phase.
Improper current	a. Incorrect current limit setting. b. Defective component in current limit circuitry.	a. Perform current limit adjustment (para. 6-9b). b. Check current limit circuitry.

(1) **Visual inspection.** The purpose of visual inspection is to locate faults without testing or measuring circuits. All meter readings on the front panel of the battery charger should be observed and an attempt made to sectionalize and localize the fault to a particular part.

(2) **Operational test.** Operational tests frequently indicate the general location of trouble. In many instances, the tests will help in determining the exact nature of the fault. The operational procedure given in paragraph 3-3, with the normally expected indications called out in the procedures, provide good operational tests.

(3) **Troubleshooting table.** The troubleshooting

table (table 6-1) lists symptoms of common troubles and gives the corrective measures or references. The table cannot indicate *all* trouble symptoms that may occur; therefore, the technician should use this table as a guide in analyzing symptoms that may not be listed.

(4) **Component locations.** Figure 6-1 shows the component locations on the battery charger.

NOTE

Should a malfunction occur, first replace printed circuit board A1. If the trouble persists, refer to troubleshooting table 6-1.

Section IV. REPAIRS AND ADJUSTMENTS

6-7. General Parts Replacement Techniques. When replacing parts in Battery Charger PP-2926D/U, observe the precautions given below:

a. Before a part is unsoldered, note the position of the leads. If the part to be replaced has a number of connections, such as a transformer, tag each lead.

b. Be careful not to damage other leads by pulling or pushing them out of the way to reach other parts or connections.

c. Do not allow drops of solder to fall into the equipment; they may cause short circuits and damage the unit.

d. When a part is replaced, it must be positioned exactly as the original part. Pay particular attention to proper grounding when replacing a part. Use the same ground as in the original wiring.

CAUTION

Meter repairs should be undertaken *only* by authorized instrument repair personnel in properly equipped shops. Attempted meter repair by unqualified personnel may result in irreparable damage to the meter.

6-8. Replacement of Parts.

WARNING

When repairing or performing adjustments to the battery charger, be extremely careful of high voltages.

All battery charger parts can be reached easily and replaced without special procedures. Refer to figure 6-1 for the location of all parts. Connect

replaced items according to the schematic diagram (figure FO-1) and the parts location diagram (figure 6-1).

6-9. Adjustments. All internal adjustments are located on printed circuit board A1 which is located on the lower right side, behind the front access panel. Refer to figure 6-2 for a view of the controls on A1.

a. Phase Adjustments.

(1) With a discharged battery connected to the battery charger, connect the oscilloscope signal input to the gate of the SCR for the phase to be adjusted (a figure 6-3).

(2) Connect the signal ground lead of the oscilloscope to the cathode of the SCR for the phase to be adjusted.

(3) Begin charging the battery (para 3-3).

(4) The waveform viewed on the oscilloscope should be similar to *b* of figure 6-3.

(5) If necessary, adjust R1, R4 and/or R7 until all peaks are of equal amplitude.

b. Current Limit Adjustment.

(1) With a fully discharged battery connected to the battery charger, set COARSE CHARGE RATE SEL switch to 550-720 AH-150A position.

(2) Rotate the FINE CHARGE RATE SEL control fully counterclockwise.

(3) Begin charging the battery (para 3-3).

(4) After the battery charger is energized, rotate the FINE CHARGE RATE SEL control clockwise until 175 amperes is indicated on the DC AMPERES meter.

(5) Adjust R15 until reading on DC AMPERES meter drops to near zero or battery charger cuts off.

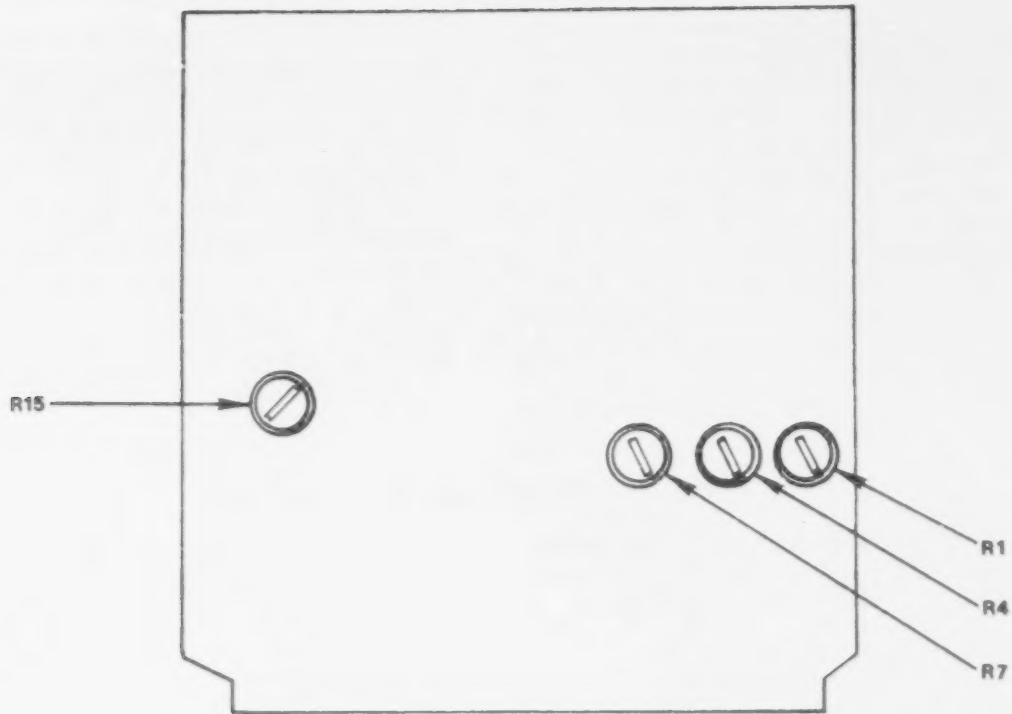
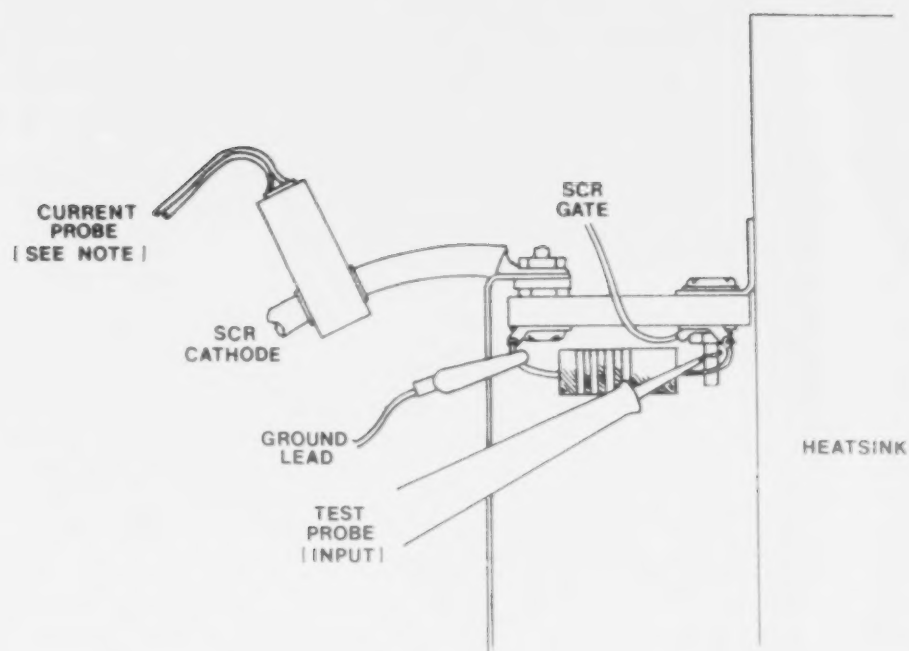


Figure 6-2. Printed Circuit Board A1 Controls. EL6FX011

A. TEST CONNECTIONS



NOTE: IN ABSENCE OF OSCILLOSCOPE, ALTERNATE CONNECTION CAN BE MADE AND PHASES BALANCED USING A CURRENT TESTER.

B. WAVEFORMS



Figure 6-3. Phase Adjustment. FL6FX012

Section V. GENERAL SUPPORT TESTING PROCEDURES

6-10. General.

a. The following testing procedures are prepared for use by general support maintenance personnel to determine the acceptability of repaired electronic equipment. These procedures establish specific requirements that repaired equipment must meet before it is returned to the using organization.

b. Comply with the instructions preceding each table. Perform each step in sequence; *do not vary the sequence*. For each step, perform all the actions required in the Control settings column; then perform each specified procedure and verify it against the performance standard.

6-11. Modification Work Orders.

The performance standards listed in the tests below are based on the assumption that all modifications have been performed. A listing of current modification work orders will be found in DA Pam 310-7.

6-12. Physical Tests and Inspection.

a. *Test Equipment and Materials.* None required.

b. *Test Connections and Conditions.* No connections; no power; front door open.

c. *Procedure.*

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	None	Any position	a. Inspect case and chassis for damage, missing parts and condition of paint. b. Inspect all controls and mechanical assemblies for loose or missing screws.	a. No damage evident or parts missing. External surfaces intended to be paint will not show bare metal. b. Screws, bolts, and nuts will be tight; none missing.

6-13. Insulation Breakdown Test.

a. *Test Equipment and Materials.*

(1) Insulation Breakdown Test Set AN/GSM-6.

(2) Two-foot length of AWG #10 wire.

(3) Ohmmeter ZM-21A/U.

b. *Test Connections and Conditions.* Turn off all power to the battery charger. Refer to figure 6-4.

c. *Procedure.*

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	None	None	a. On AN/GSM-6, connect output connector to negative (-) output terminal. b. Connect terminal strap to positive (+) output terminal of AN/GSM-6. c. Lower high-voltage plate of AN/GSM-6 against output terminal. d. Connect output cable of AN/GSM-6 to PP-2926D/U as follows: (1) On PP-2926D/U, jumper across terminals F1, F2, F3. (2) Connect one end of two-foot length of #10 wire to TB1-Fc (3) Connect high-voltage connection of AN/GSM-6 to other end of wire. CAUTION Be sure to maintain at least a 6-inch clearance between guard	a. None. b. None c. None d. None

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1(Cont.)			wire and high-voltage lead, and between the guard wire and frame of PP-2926D/U during testing. (4) Connect a guard wire from guard connector of AN/GSM-6 to insulation of the #10 wire. (5) Connect chassis of PP-2926D/U to earth ground.	
2	AN/GSM-6 AMMETER MULTIPLIER switch to 1000. Kilovolt-meter polarity switch to —. Microammeter polarity switch to —. VOLTMETER RANGE switch to 5. Voltage control to 0. High-voltage caution plate raised and secured with chain. Circuit breaker at ON.		a. Press high-voltage control and rotate ccw while watching kilovolt-meter and microammeter. Continue until maximum voltage (1920 volts) is reached. b. Maintain output voltage for 60 to 90 seconds. c. Set voltage control to 0, circuit breaker switch to OFF, and allow AN/GSM-6 to discharge (through its internal resistance). When kilovolt-meter reading is nearly zero, short output terminals by lowering the high-voltage caution plate. d. Disconnect equipment	a. Reading of approximately 1.92 kilovolts on 5Kv scale. b. No insulation breakdown. (Opening of circuit breaker switch, lighting of DC OVERLOAD indicator or wavering of microammeter pointer of AN/GSM-6 are indications that insulation is defective).
3			a. Connect ground lead of ZM-21A/U to frame of PP-2926D/U. b. Connect line lead of ZM-21A/U to + output side of charging cable. c. Operate ZM-21A/U and observe meter. d. Disconnect equipment	d. None a. None b. None c. Meter indicates greater than 90 megohms. d. None

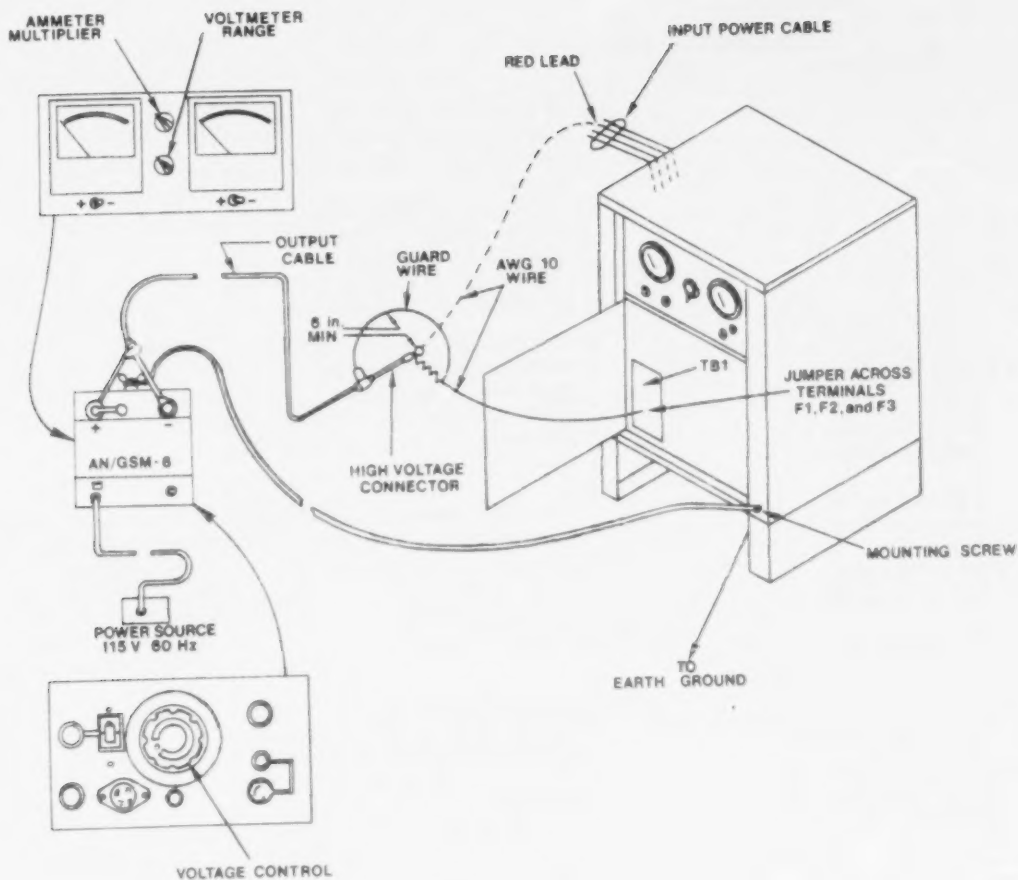


Figure 6-4. Insulation Breakdown Test Setup. EL6FX014

6-14. Performance Test.

a. Test Equipment and Materials.

- (1) Multimeter TS-352B/U.
- (2) Known good 18-cell lead-acid battery in discharged state (specific gravity less than 1.190).

b. *Test Connection and Conditions.* Connect the equipment as shown in figure 6-5. Do not turn on input power to the PP-2926D/U until instructed to do so in 1e below. This test is for operation of the PP-2926D/U at 208-volt, three-phase input power.

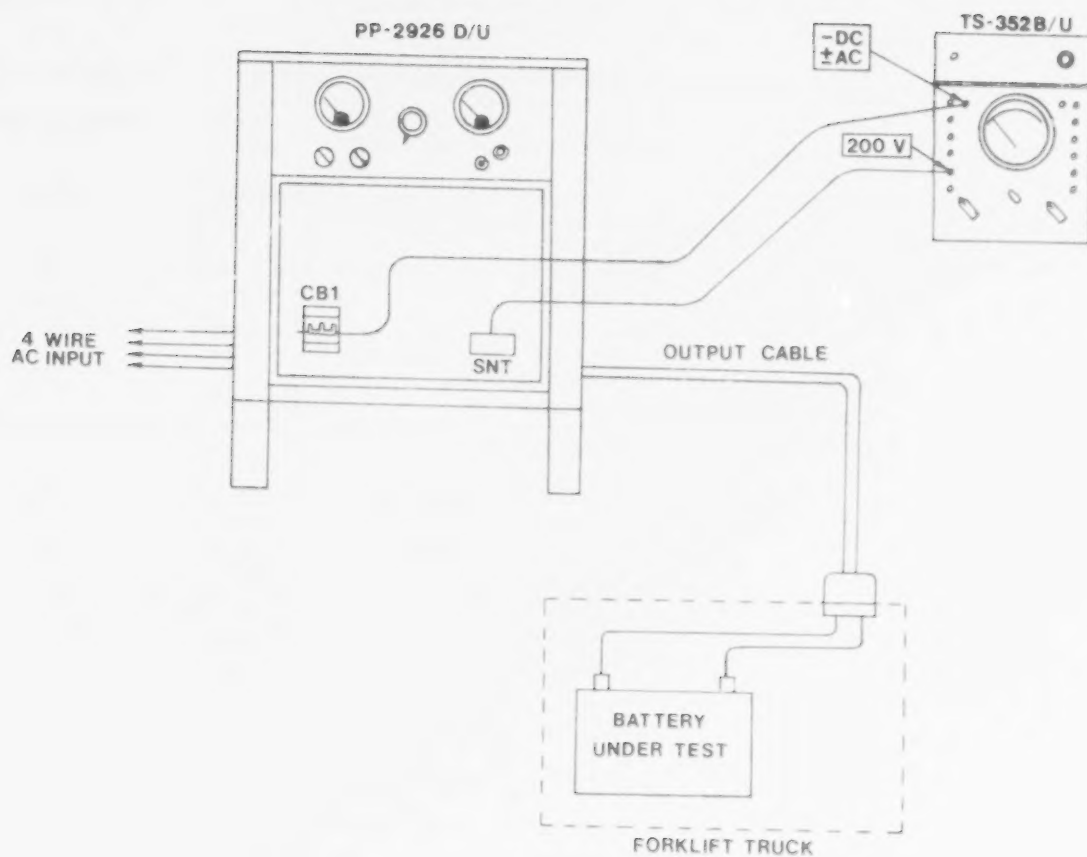


Figure 6-5. Performance Test Setup. EL6FX015

c. Procedure

Step No.	Control settings		Test procedure	Performance standard
	Test equipment	Equipment under test		
1	TS-352B/U FUNCTION TO DIRECT.	TIMER to OFF. COARSE CHARGE RATE SEL to 520-720AH-150A. FINE CHARGE RATE SEL fully ccw	a. Connect PP-2926D/U for 208-volt, 3-phase operation. b. Connect PP2926D/U to 208-volt, 3-phase input power source. c. Connect dc output cable to 18-cell lead-acid battery. d. Remove vent caps from battery and add distilled or deionized water as necessary. CAUTION Never smoke or light matches in the charging area. e. Set TIMER to 8 and monitor initial battery charging current on unit dc ammeter. f. Allow charging to continue while monitoring charging current. g. continue charging until timer reaches OFF.	a. None b. None c. None d. None e. Ammeter reading is less than 140 amps. f. Charging current reduces. g. PP-2926D/U automatically turns off.
2		COARSE CHARGE RATE SEL to 300-350AH-70A.	a. Same as a and b above. b. Connect dc output cable to 18-cell lead-acid battery. c. Same as d above. d. Set timer to 8 hrs. and monitor initial battery charging current on unit dc ammeter. e. Continue to monitor charging current. f. Monitor unit voltmeter. g. Monitor ammeter. h. Continue charging until timer reaches OFF. i. Disconnect equipment.	a. None b. None c. None d. Ammeter reading is less than 70 amps. e. Charging current reduces. f. Charging voltage decreases slightly. g. Charging current reduces. h. PP-2926D/U automatically turns off. i. None

APPENDIX A

REFERENCES

DA Pam 310-4	Index of Technical Manuals, Technical Bulletins, Supply Manuals (types 7, 8 and 9), Supply Bulletins, and Lubrication Orders.
DA Pam 310-7	US Army Equipment Index of Modification Work Orders.
TB 43-0118	Field Instructions for Painting and Preserving Electronics Command Equipment Including Camouflage Pattern Painting of Electrical Equipment Shelters.
TM 9-6140-200-12	Operator and Organizational Maintenance Manual for Lead-Acid Storage Batteries.
TM 10-1690A	Industrial Motive Power Storage Batteries for Materials Handling Equipment.
TM 38-750	The Army Maintenance Management System (TAMMS).
TM 750-244-2	Procedures for Destruction of Electronics Materiel to Prevent Enemy Use.

APPENDIX B

COMPONENTS OF END ITEM AND BASIC ISSUE ITEMS LISTS

Section I. INTRODUCTION

B-1. Scope

This appendix lists components of end item and basic issue items for the PP-2926D/U to help you inventory items required for safe and efficient operation.

B-2. General

The Components of End Item and Basic Issue Items Lists are divided into the following sections:

a. *Section II—Components of End Item.* This listing is for informational purposes only, and is not authority to requisition replacements. These items are part of the end item, but are removed and separately packaged for transportation or shipment. As part of the end item, these items must be with the end item whenever it is issued or transferred between property accounts. Illustrations are furnished to assist you in identifying the items.

b. *Section III—Basic Issue Items.* These are the minimum essential items required to place the PP-2926D/U in operation, to operate it, and to perform emergency repairs. Although shipped separately packaged, BII must be with the PP-2926D/U during operation and whenever it is transferred between property accounts. The illustrations will assist you with hard-to-identify

items. This manual is your authority to request/requisition replacement BII, based on TOE/MTOE authorization of the end item.

B-3. Explanation of Columns

The following provides an explanation of columns found in the tabular listings:

a. *Column (1)—Illustration Number (Illustration Number).* This column indicates the number of the illustration in which the item is shown.

b. *Column (2)—National Stock Number.* Indicates the National stock number assigned to the item. The National stock numbers in section III will be used for requisitioning basic issue items.

c. *Column (3)—Description.* Indicates the National item name and, if required, a minimum description to identify and locate the item. The last line for each item indicates the FSCM (in parentheses) followed by the part number.

d. *Column (4)—Unit of Measure (U/M).* Indicates the measure used in performing the actual operational/maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr).

e. *Column (5)—Quantity required (Qty Rqd).* Indicates the quantity of the item authorized to be used with/on the equipment.

(Next printed page is B-2)

SECTION II COMPONENTS OF END ITEM

(1) ILLUS NO.	(2) NATIONAL STOCK NUMBER	(3) DESCRIPTION (FSCM) AND PART NUMBER USABLE ON CODE	(4) U/M	(5) QTY REQD
1-1	6130-01-099-5975	BATTERY CHARGER PP-2926D/U (52512)	EA	1
		TECHNICAL MANUAL TM 11-6130-412-14 (52512) SECTION III BASIC ISSUE ITEMS (NOT APPLICABLE)	EA	1

APPENDIX D

MAINTENANCE ALLOCATION

Section I. INTRODUCTION

D-1. General.

This appendix provides a summary of the maintenance operations for PP-2926D/U. It authorizes categories of maintenance for specific maintenance functions on repairable items and components and the tools and equipment required to perform each function. This appendix may be used as an aid in planning maintenance operations.

D-2. Maintenance Function.

Maintenance functions will be limited to and defined as follows:

a. Inspect. To determine the serviceability of an item by comparing its physical, mechanical, and/or electrical characteristics with established standards through examination.

b. Test. To verify serviceability and to detect incipient failure by measuring the mechanical or electrical characteristics of an item and comparing those characteristics with prescribed standards.

c. Service. Operations required periodically to keep an item in proper operating condition, i.e., to clean (decontaminate), to preserve, to drain, to paint, or to replenish fuel, lubricants, hydraulic fluids, or compressed air supplies.

d. Adjust. To maintain, within prescribed limits, by bringing into proper or exact position, or by setting the operating characteristics to the specified parameters.

e. Align. To adjust specified variable elements of an item to bring about optimum or desired performance.

f. Calibrate. To determine and cause corrections to be made or to be adjusted on instruments or test measuring and diagnostic equipments used in precision measurement. Consists of comparisons of two instruments, one of which is a certified standard of known accuracy, to detect and adjust any discrepancy in the accuracy of the instrument being compared.

g. Install. The act of emplacing, seating, or fixing into position an item, part, module (component

or assembly) in a manner to allow the proper functioning of the equipment or system.

h. Replace. The act of substituting a serviceable like type part, subassembly, or module (component or assembly) for an unserviceable counterpart.

i. Repair. The application of maintenance services (inspect, test, service, adjust, align, calibrate, replace) or other maintenance actions (welding, grinding, riveting, straightening, facing, remachining, or resurfacing) to restore serviceability to an item by correcting specific damage, fault, malfunction, or failure in a part, subassembly, module (component or assembly), end item, or system.

j. Overhaul. That maintenance effort (service/action) necessary to restore an item to a completely serviceable/operational condition as prescribed by maintenance standards (i.e., DMWR) in appropriate technical publications. Overhaul is normally the highest degree of maintenance performed by the Army. Overhaul does not normally return an item to like new condition.

k. Rebuild. Consists of those services/actions necessary for the restoration of unserviceable equipment to a like new condition in accordance with original manufacturing standards. Rebuild is the highest degree of material maintenance applied to Army equipment. The rebuild operation includes the act of returning to zero those age measurements (hours, miles, etc.) considered in classifying Army equipments/components.

D-3. Column Entries.

a. Column 1, Group Number. Column 1 lists group numbers, the purpose of which is to identify components, assemblies, subassemblies, and modules with the next higher assembly.

b. Column 2, Component/Assembly. Column 2 contains the noun names of components, assemblies, subassemblies, and modules for which maintenance is authorized.

c. Column 3, Maintenance Functions. Column 3 lists the functions to be performed on the item

listed in column 2. When items are listed without maintenance functions, it is solely for purpose of having the group numbers in the MAC and RPSTL coincide.

d. Column 4, Maintenance Category. Column 4 specifies, by the listing of a "work time" figure in the appropriate subcolumn(s), the lowest level of maintenance authorized to perform the function listed in column 3. This figure represents the active time required to perform that maintenance function at the indicated category of maintenance. If the number or complexity of the tasks within the listed maintenance function vary at different maintenance categories, appropriate "work time" figures will be shown for each category. The number of task-hours specified by the "work time" figure represents the average time required to restore an item (assembly, subassembly, component, module, end item or system) to a serviceable condition under typical field operating conditions. This time includes preparation time, troubleshooting time, and quality assurance/quality control time in addition to the time required to perform the specific tasks identified for the maintenance functions authorized in the maintenance allocation chart. Subcolumns of column 4 are as follows:

C—Operator/Crew
O—Organizational
F—Direct Support
H—General Support
D—Depot

e. Column 5, Tools and Equipment. Column 5 specifies by code, those common tool sets (not individual tools) and special tools, test, and support

equipment required to perform the designated function.

f. Column 6, Remarks. Column 6 contains an alphabetic code which leads to the remark in section IV, Remarks, which is pertinent to the item opposite the particular code.

D-4. Tool and Test Equipment Requirements (Sect. III).

a. Tool or Test Equipment Reference Code. The numbers in this column coincide with the numbers used in the tools and equipment column of the MAC. The numbers indicate the applicable tool or test equipment for the maintenance functions.

b. Maintenance Category. The codes in this column indicate the maintenance category allocated the tool or test equipment.

c. Nomenclature. This column lists the noun name and nomenclature of the tools and test equipment required to perform the maintenance functions.

d. National/NATO Stock Number. This column lists the National/NATO stock number of the specific tool or test equipment.

e. Tool Number. This column lists the manufacturer's part number of the tool followed by the Federal Supply Code for manufacturers (5-digit) in parentheses.

D-5. Remarks (Sect. IV).

a. Reference Code. This code refers to the appropriate item in section II, column 6.

b. Remarks. This column provides the required explanatory information necessary to clarify items appearing in section II.

(Next printed page is D-4)

SECTION II MAINTENANCE ALLOCATION CHART
FOR

BATTERY CHARGER PP-2926D/U

(1) GROUP NUMBER	(2) COMPONENT/ASSEMBLY	(3) MAINTENANCE FUNCTION	(4) MAINTENANCE CATEGORY					(5) TOOLS AND EQPT.	(6) REMARKS
			C	O	F	H	D		
00	BATTERY CHARGER PP-2926D/U	INSPECT	0.1					1	A
		SERVICE		0.2				1	
		TEST	0.2					3	B
				0.2				4 thru 9	C
		ADJUST	0.1			1.0			D
						0.2		2	E
		REPLACE		0.5				1	F
01	PRINTED CIRCUIT BOARD	REPAIR				1.0		2	D
		OVERHAUL				1.		2	
							32.0	2 thru 11	
		TEST				0.5		4, 7 thru 10	
		REPLACE				0.2		2	
		REPAIR				0.5		2	

TABLE III. TOOL AND TEST EQUIPMENT REQUIREMENTS
FOR
BATTERY CHARGER PP-2926D/U

TOOL OR TEST EQUIPMENT REF CODE	MAINTENANCE CATEGORY	NOMENCLATURE	NATIONAL/NATO STOCK NUMBER	TOOL NUMBER
1	D	TOOL KIT, ELECTRONIC EQUIPMENT TK-101/G	5180-00-064-1178	
2	H,D	TOOL KIT, ELECTRONIC EQUIPMENT TK-105/G	5180-00-610-8177	
3	D	MULTIMETER AN/URM-105	6625-00-581-2036	
4	H,D	MULTIMETER AN/USM-223	6625-00-999-7465	
5	H,D,	OHMMETER ZM-21/U	6625-00-581-2466	
6	H,D	TEST SET, INSULATION BREAKDOWN AN/GSM-6	6625-00-542-1331	
7	H,D	OSCILLOSCOPE AN/USM-281	6625-00-106-9622	
8	H,D	TEST SET, SEMICONDUCTOR DEVICE TS-1836/U	6625-00-159-2263	
9	H,D	VOLTMETER, DIGITAL AN/GSM-64	6625-00-022-7894	
10	H,D	18-CELL LEAD ACID BATTERY, OR LOAD BANK, RESISTIVE, VARIABLE RANGE 0.2 TO 32.0 OHMS, 250 AMPERES; WARD LEONARD ELECTRIC COMPANY TYPE K, 48149		
11	D	AC-DC CLAMP AMMETER, RANGE 0-100, 0-500 "TONE TEST"; COLUMBIA ELECTRIC MFR. CO., OR EQUAL		

SECTION IV. REMARKS

REFERENCE CODE	REMARKS
A	EXTERIOR
B	OPERATIONAL
C	INPUT-OUTPUT VOLTAGE; CONTINUITY POWER CABLES
D	PRINTED CIRCUIT BOARD
E	FRONT PANEL CONTROLS
F	INPUT AND OUTPUT POWER CABLES; FRONT PANEL KNOBS

APPENDIX E

EXPENDABLE SUPPLIES AND MATERIALS LIST

Section I. INTRODUCTION

E-1. Scope

This appendix lists expendable supplies and materials you will need to operate and maintain the PP-2926D/U. These items are authorized to you by CTA 50-970, Expendable Items (Except Medical, Class V, Repair Parts, and Heraldic Items).

E-2. Explanation of Columns

a. Column 1—Item Number. Not used.

b. Column 2—Level. This column identifies the lowest level of maintenance that requires the listed item.

C—Operator/Crew

O—Organizational Maintenance

F—Direct Support Maintenance

H—General Support Maintenance

c. Column 3—National Stock Number. This is the National stock number assigned to the item; use it to request or requisition the item.

d. Column 4—Description. Indicates the Federal item name and, if required, a description to identify the item. The last line for each item indicates the part number followed by the Federal Supply Code for Manufacturer (FSCM) in parentheses, if applicable.

e. Column 5—Unit of Measure (U/M). Indicates the measure used in performing the actual maintenance function. This measure is expressed by a two-character alphabetical abbreviation (e.g., ea, in, pr). If the unit of measure differs from the unit of issue, requisition the lowest unit of issue that will satisfy your requirements.

(Next printed page is E-2)

SECTION II EXPENDABLE SUPPLIES AND MATERIALS LIST

(1) ITEM NO.	(2) LEVEL	(3) NATIONAL STOCK NUMBER	(4) DESCRIPTION	(5) UNIT OF MEAS
			PART NO. AND FSCM	
	0	6850-00-105-3084	TRICHLOROTRIFLUOROETHANE	PT
	0	8305-00-222-2423	CLOTH, LINT-FREE	YD
	0	5970-00-644-3167	TAPE, INSULATION	RL
	0	8020-00-721-9657	BRUSH, PAINT	EA
	0		SANDPAPER, FINE, NO. 000	EA

INDEX

<i>Subject</i>	<i>Paragraph</i>	<i>Page</i>	<i>Subject</i>	<i>Paragraph</i>	<i>Page</i>
Adjustments	6-9	6-5	Operating Procedures	3-3	3-1
Administrative Storage	1-4	1-1	Operator/Organizational Maintenance:		
Basic Charging Circuit, Functioning of	5-2	5-1	Cleaning	4-5	4-1
Block Diagram Description	5-2	5-1	Materials Required	4-2	4-1
Checking Unpacked Equipment	2-2	2-1	Operators Controls And Indicators	3-2	3-1
Charge Rate Adjustment	3-2	3-1	Performance Testing	6-14	6-10
Cleaning	4-5	4-1	Physical Tests And Inspection:		
Control Circuitry Description	5-4	5-1	General Support	6-12	6-8
Current Limiting Circuits, Functioning of	5-8	5-3	Organizational Support	4-3	4-1
Current Limiting Circuits, Adjustment	6-9b	6-5	Power Connections	2-4h	2-3
Cutout Circuit Description	5-6	5-2	Preliminary Starting Procedure	3-3	3-1
Description Of Equipment	1-8	1-2	Preventive Maintenance Checks And		
Destruction Of Army Electronics Material	1-5	1-1	Services	4-3	4-1
General Support Maintenance:			Purpose And Use Of Equipment	1-7	1-2
Adjustments	6-9	6-5	Rectifier Circuitry Description	5-3	5-1
Parts Removal And Replacement	6-7	6-5	Repainting	4-6	4-2
Repair Parts	6-4	6-4	Rustproofing	4-5	4-2
Supporting Illustrations	6-2	6-1	Scope Of Manual	1-1	1-1
Testing	6-10	6-8	Site Selection	2-4	2-3
Tools And Test Equipment Required	6-3	6-4	Start Circuitry Description	5-7	5-2
Troubleshooting	6-5	6-4	Storage, Administrative	1-4	1-1
Waveforms	6-9	6-5	Testing, General	4-3	4-1
Indexes Of Publications	1-2	1-1	Thermal Switch	5-7	5-2
Installation Instructions	2-4	2-3	Tools And Test Equipment:		
Items Comprising An Operable			Organizational	4-1	4-1
Equipment	2-2	2-1	General	6-3	6-4
Maintenance Forms And Records	1-3	1-1	Troubleshooting:		
Materials Required:			Organizational	4-7	4-2
General Support Maintenance	6-1	6-1	General	6-6	6-4
Operator Maintenance	4-3	4-1	Unpacking	2-1	2-1
Organizational Maintenance	4-3	4-1	Waveforms	6-9	6-5

Charts Transposed to
End of Volume.

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DATE SENT

10 July 1975

PUBLICATION NUMBER

TM 11-5840-340-12

PUBLICATION DATE

23 Jan 74

PUBLICATION TITLE

Radar Set AN/PRC-76

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2-25	2-28		
3-10	3-3		3-1
5-6	5-8		

IN THIS SPACE TELL WHAT IS WRONG AND WHAT SHOULD BE DONE ABOUT IT:

Recommend that the installation antenna alignment procedure be changed throughout to specify a 2° IFF antenna lag rather than 1° .

REASON: Experience has shown that with only a 1° lag, the antenna servo system is too sensitive to wind gusting in excess of 25 knots, and has a tendency to rapidly accelerate and decelerate as it hunts, causing strain to the drive train. Hunting is minimized by adjusting the lag to 2° without degradation of operation.

Item 5, Function column. Change "2 db" to "3db."

REASON: The adjustment procedure the the TRANS POWER FAULT indicator calls for a 3 db (500 watts) adjustment to light the TRANS POWER FAULT indicator.

Add new step f.1 to read, "Replace cover plate removed step e.1, above."

REASON: To replace the cover plate.

Zone C 3. On J1-2, change "+24 VDC to "+5 VDC."

REASON: This is the output line of the 5 VDC power supply. +24 VDC is the input voltage.

PRINTED NAME, GRADE OR TITLE AND TELEPHONE NUMBER

SSG I. M. DeSpirito 999-1776

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TOAD (14)
SHAD (2)
Sig Sec USA Dep (1)
USA Dep (1)
Units org under fol TOE: (2)
29-207
29-610

NG: State AG (3) Units—NONE

USAR: NONE

For explanation of abbreviations used see AR 310-50.

